

LOBOSCELIDIIDAE, A NEW FAMILY OF HYMENOPTERA

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Abstract: The genus *Loboscelidia* Westwood, formerly referred to either Diapriidae or Cynipidae, is here made the type of a new family, Loboscelidiidae. On the basis of comparisons of some of its morphological characters with the Proctotrupoidea, Cynipoidea and Bethyloidea, this new family is assigned to the Bethyloidea (*s. l.*) and placed next to the Chrysidae. Besides a diagnosis of the family and discussion of its systematic position, contents of the paper are: redescription of the genus, key to and list of species, erection of a new subgenus for *L. antennata* Fouts, descriptions of three new species (*reducta* from Vietnam, *parva* and *cervix* from New Britain), notes (by M. W. R. de Graham) on *L. rufescens* Westw. and redescrptions of seven other species.

After describing the new genus *Loboscelidia*, Westwood (1874: 171) dubiously referred it to the Diapriidae, Proctotrupoidea, but stated that in certain respects it approached the Cynipidae, Cynipoidea. Following his suggestion, most of the later authors placed it in the former family (Dalla Torre 1898: 431; Kieffer 1916 a: 14, 1916 b: 399; Fouts 1922: 619), whereas Ashmead (1903: 140) erected a new tribe Loboscelidiini for its reception and placed it in Xystinae, Figitidae (according to the current system, Charipinae is the correct name for Xystinae and is a subfamily of Cynipidae, *s. s.* See Weld 1952: 250).

In superficial appearance, these wasps resemble alate cynipids or formicids and, to a small extent, staphylinid beetles with their hindwings extended caudad (the exceptionally large tegulae simulate staphylinid elytra). A close examination reveals that the genus can be assigned to neither Diapriidae nor Cynipidae, but clearly represents a distinct family by itself.

The genus has been little collected and studied. Altogether 14 species have been described and about 40 specimens recorded in the literature. The biology is entirely unknown, and amongst the species described, only one is known from both sexes. In the following pages, a discussion on the systematic position and revised description of the genus, key to and list of all species, and descriptions and redescrptions of a few species are given. In the descriptions, all relative measurements are given in divisions of an eyepiece micrometer, 83 units=2 mm. The scape of the antenna is measured in frontal view when it lies flatly against the side of face; the hind leg in side view. For brevity, the length and width of the same structure are expressed by certain micrometer divisions times certain divisions. For instance, 3×5 means the ratio of the median length and maximum width is 3 to 5. The integumental sculpture was studied under the magnification 60 ×.

FAMILY LOBOSCELIDIIDAE (Ashmead). n. status

Body 2–4 mm long. Head strongly declivous; mandible normal; antennal ledge (frontal prominence) prominent, distant from clypeus; genal, postgenal and postoccipital bridges all well developed; postocciput exceptionally broad; antenna filiform and 13-segmented in both sexes; scape with lamina; vertex with a quadrate or subquadrate plate overhanging foramen magnum. Cervical area (fig. 1) with 3 pairs of membranous laminae on occiput, pronotum and propleura respectively. Pronotum never shorter than mesoscutum, its posterior angles touching tegulae and posterolateral margins closely fitting mesopleura. Mesoscutum with complete or nearly complete parapsidal furrows; no notaulices. Scutellum simple. Propodeum unsculptured, nearly vertical, hardly separated from metapleura. Wings (fig. 4) well developed in both sexes. Forewing large, long, with or without short cilia, at most with 1 closed cell (basimedial), lacking stigma; veins restricted to basal 1/3, veinless at apical 2/3, with only 3 longitudinal veins (subcosta, medial and humeral); costa absent, subcosta usually briefly forked at apex, basal vein usually present and complete. Hindwing ciliate, veinless; anal lobe long, distinct. Trochanters 1-jointed; femora and tibiae (fig. 5) each with membranous lamina; fore tarsus normal. Gaster (fig. 2) short, small, with 4 exposed segments behind petiole; petiole short, with spiracles (size of about 1/2 of other abdominal spiracles, no apparent connecting tracheae, probably not functional); tergites 3 to 6 with spiracles, and strongly extending ventrad to embrace corresponding sternites; tergite 3 immovably fused with 4; 4 quite large; 5 and 6 much smaller; sternites 3 and 4 entirely amalgamated, scarcely exposed at middle; 5 and 6 entirely overlapped by tergites; segments 7 and 8 retracted; remaining apical segments not clearly recognizable. Male genitalia (fig. 3) small, ovoid in dorsal and ventral views; basal ring large, paramere not clearly separated from basiparamere; aedeagus, cuspis and digitus all long and slender (terminology of genitalia after Snodgrass 1941). Pygostyles apparently absent.

The most striking character of Loboscelidiidae, as indicated by the name, is the posterior prolongation of the head which forms a large dorsal plate bridging the head and pronotum and a narrow sharp lobe supporting the dorsal plate and embracing the foramen magnum. The cervical muscles are strong, and the pronotum has an anterior submarginal groove to fit in the posterior end of the dorsal plate. However, it is unlikely that the head can be moved up and down very freely or the plate can glide back and forth against the dorsal surface of the pronotum. Another conspicuous character is the membranous or foliaceous laminae on the antennal scape, cervical region and all femora and tibiae. Those at the cervical region are very thin, transparent and striated and have the appearance of matted pubescence, whereas those at the remaining regions are more heavily sclerotized, semitransparent or nearly opaque and not or indistinctly striated. Pubescent tufts are known to occur at the cervical region in a few groups of nearly naked myrmecophilous insects and parasitic wasps. Some hypotheses regarding their function have been suggested but none seems to have been generally accepted. Whether or not the cervical laminae in the Loboscelidiidae are of any function is quite problematic, although there is a slight possibility that the striation may represent secretory ducts. The lamina-like structure found on the antennae and legs in the male of several groups of insects is used for grasping the female while mating. In this family, the laminae on these regions

do not show sexual dimorphism, and therefore, they should serve for some uncertain purpose. The very large tegulae perhaps can move up and down and function as the elytra or tegmina of other insects, otherwise the loboscelidiids would be flightless.

The above mentioned head process and laminae are not found in allied families and probably not in any other Hymenoptera. Within the family, however, they vary both in size and shape and afford good specific characters. The antennal ledge is known also in Diapriidae (Proctotrupoidea) and Embolemidae (Bethyloidea), but has developed independently and does not indicate relationships.

Other more important characters of this family may be separately discussed and compared with those of the Cynipoidea, Proctotrupoidea and Bethyloidea below.

(a) Hypostomal region: The occipital and postoccipital carinae form complete circles around the foramen magnum and, except the lower portion of the occipital carina, all are very strong. Consequently the hypostomal, genal, postgenal and postoccipital bridges all can be recognized and are rather similar to those of the Bethyloidea in general.

(b) Antennae: The antennae scarcely show sexual dimorphism, either in the shape, or in the number of segments. This is as in the Bethyloidea, but not Proctotrupoidea or Cynipoidea.

(c) Pronotum: The posterolateral extension of the pronotum is acute and the posteroventral margin is closely fitted to the mesopleuron, as in the Cynipoidea and Proctotrupoidea, but markedly different from most Bethyloidea.

(d) Forewing venation: The forewing venation is quite unusual in several respects. The complete absence of the costa and stigma, the remoteness of the subcosta from the costal margin and a short but strong humeral vein are similar to the Cynipoidea. However, loboscelidiids lack the characteristic radial cell of that superfamily. The vein-reduction takes place only at the apical portion of the wing, whereas generally the mode of reduction in the Hymenoptera is both in the apical and anal parts. The thickened apical part of the subcosta in certain species of the family simulates the "parastigma" of some Bethyloidea. The three existing longitudinal veins are similar in thickness. Their arrangement seems more like the Aculeata rather than Parasitica, if one ignores the costa and stigma. The strongly curved and branched folds (unpigmented concave lines) are uncommon, if not unique for the order. The wings at repose fully overlap one another and are placed on the back, and the costal margins are virtually parallel. In this respect, the loboscelidiids are similar to the Bethyloidea rather than the other two superfamilies.

(e) Hindwing: The lack of any closed cell in the hindwing is similar to the Bethyloidea and Proctotrupoidea except some Diapriidae. The anal lobe is so large and deeply incised that there is no doubt of its Aculeata affinity. This lobe is absent in the Cynipoidea and Proctotrupoidea except for a few anomalous and dubious Proctotrupoidea (but not Diapriidae).

(f) Abdomen: The general features of the abdomen are fairly similar to the Cynipoidea. It is short, semitransparent, rather lightly sclerotized, and with sternites almost entirely overlapped by corresponding tergites. But there are only four exposed gastral segments behind the petiole and each has a pair of spiracles. The next 2 segments are retracted, and the pygostyles are apparently absent (pygostyles absent in Cynipoidea but present in most Proctotrupoidea). In these respects, the loboscelidiids are rather similar to

the Bethyloidea. The tergite 2 and sternite 2 are fused together to form the petiole. Tergites 3 and 4 are also fused, although they are not lying on same plane in natural state and there is a semitransparent seam indicating their common border line. Sternites 3 and 4 are entirely amalgamated. Such fusions of basal gastral segments are found in a number of the Cynipoidea, a few Proctotrupoidea but probably none in Bethyloidea. It is difficult to identify the membranous apical segments, but the linear bar and roundish plate associated with the male genitalia perhaps may be regarded as the ninth segment.

(g) Male genitalia: The male genitalia is rather similar to that of the Bethyloidea. It is simple but much more generalized than in the Cynipoidea and Proctotrupoidea. The basivolsellae are separated from one another, lie between the basiparameres and each is produced into inner and outer free lobes, which were doubtfully referred by Snodgrass (1941: 39) to *digitus* and *cuspidis* respectively. Both lobes are simple, long, slender and horizontal. The aedeagus is entirely free from the volsellae, and its lateral sclerites end in two free points. In the two latter superfamilies and most other Parasitica, each volsella bears a single terminal lobe, *digitus*, which is freely articulated on the supporting plate and is short, stout, vertically upraised and often armed with denticles or strong spines, and the aedeagus is at least partly united with the volsellae.

Ashmead (*l. c.*) admitted having not seen any actual specimen of *Loboscelidia* and the characters enumerated by him were taken from Westwood's description and drawing. He wrongly stated that the antennae in ♀ were 14-segmented and the hind tibiae had only one apical spur each, but the placing of the genus in the Charipinae is not entirely groundless. In the most recent key to families and subfamilies of the Cynipoidea by Weld (1952: 83-84), it runs to the same subfamily. The characters common to the Loboscelidiidae and Charipinae are: body small, without or almost without conspicuous sculpture; scutellum convex, smooth; antennae filiform, 13-segmented (in Charipinae ♂, usually 14-segmented); abdomen short, subglobose, with longest tergite lying at or near base, sternites almost entirely concealed, petiole short. But most of these are superficial characters and none is of fundamental importance. On the other hand, the anal lobe, distinct humeral vein, antennal ledge and five pairs of abdominal spiracles, for instance, are unknown in the superfamily Cynipoidea.

From the Diapriidae, with which the loboscelidiids have long been incorporated, they can be easily distinguished by a slight sexual dimorphism and by having long filiform antennae, simple scutellum, distinct anal lobe, unusually large second (instead of first) post-petiole segment, 5 (instead of 1 or 2) pairs of abdominal spiracles, retracted tergites 7 and 8, fused tergites 3 and 4, large tegulae and large "calyptrae" of propodeal spiracles and also in lacking pygostyles, pterostigma, etc. Most of these characters are also applicable for separating the Loboscelidiidae from Proctotrupoidea other than Diapriidae.

On considering the various evidences discussed above, the new family Loboscelidiidae is provisionally referred to the superfamily Bethyloidea in the broadest sense, and placed next to the family Chrysididae. Comparisons of some external characters with other families of the superfamily are given in table 1 (characters only known to the Loboscelidiidae are not listed). It may be mentioned that the limits of the Bethyloidea and interrelationship of the families are still unsettled. The Chrysididae (including Cleptidae), Dryinidae and Embolemidae were placed elsewhere by some authors. It is our belief that until a sound, natural classification of the Hymenoptera, based on more detailed and com-

prehensive data, can be completed, the relative systematic position of these families will be by no means certain.

In correspondence, Dr. Krombein very kindly advised: "I have never studied *Loboscelidia* very closely but I am quite convinced that it belongs in the superfamily Bethyloidea in the family Chrysididae and should form an aberrant subfamily most closely related to the Amiseginae and Adelphinae." We fully agree on these points regarding the anomaly of *Loboscelidia* and its affinities to the Amiseginae including Adelphinae. (See Krombein 1957: 155). But perhaps due to the difference in the family-concept, this genus seems justified to stand for a distinct family. The dorsal cervical plate, the antennal ledge and the antennal, cervical, femoral and tibial membranous laminae may be considered as secondary developments within this group. However, the following characters are believed to be of importance and to be unknown in the Chrysididae: (a) the fusion of the second tergite with the second sternite (petiole), as evidenced by a pair of reduced (probably functionless) spiracles (fig. 2); (b) the strongly developed coverings ("calyptrae" of authors) of the propodeal spiracles (probably correlated with the reduction of the first gastral spiracles noted above); (c) the remoteness of the antennal insertions from the mouthparts; (d) the wide cheeks, as compared with the size of the eyes; (e) the proximity of the ocelli to one another and to the occiput; (f) the posterior membranous flap of the pronotum overlapping the mesoscutum (even though the body is very strongly humpbacked); (g) the exceptionally large tegulae; (h) the remoteness of forewing veins from the costal margin; (i) the entire absence of the forewing stigma and hindwing veins; (j) the overlapping of the ventral flaps of tergites; (k) the dorsally split basiparameres of the male genitalia and the apically shallowly cleft aedeagus (basiparameres of *Chrysis* and allies completely united on dorsal surface, aedeagus of the same deeply cleft apically; see Snodgrass 1941: 42, pl. 13); (l) the presence of spiracles on all exposed gastral segments (first exposed segment of *Chrysis* and allies lacking spiracles; see Snodgrass, *l. c.*).

We were able to dissect only two males of *Loboscelidia* and have no female specimens of the genus and no male Amiseginae. The future discovery of intermediate forms may necessitate modifications or corrections of the characters enumerated above and relative positions of the Loboscelidiidae and Chrysididae.

Table 1. Loboscelidiidae and other families of the Bethyloidea (*s. l.*), comparison of some external characters.

	No. of antennal segments	No. of closed forewing cells	No. of exposed gastral tergites	Antennal ledge	Forewing stigma
Loboscelidiidae	13	0-1	3(+1)	present	no
Chrysididae	12-13	3+	2-6	no	present
Bethylidae	11-13	0-7	7-8	no	present, seldom vestigial
Sclerogibbidae	17-40	3+	6-7	no	present
Dryinidae	10	1+	7-8	no	present
Embolemidae	10	4+	7-8	present	present

Genus *Loboscelidia* Westwood

Loboscelidia Westwood 1874: 171. Type: *Loboscelidia rufescens* Westw., monobasic.

Loboscelidoidea (emended) Rye 1876 IN Zool. Rec. **11** (1874): 365 & 552; Dalla Torre 1898: 431.

Loboscelidiodea (wrong citation) Kieffer 1916 b: 399.

Body short, smooth, shining, hardly haired. Head transverse in vertical view, not narrower than high in frontal view, much higher than long in side view; lower 1/2 of face almost horizontal; mouthparts small, lying on ventral side of head; mandible edentate, subtriangular, with tips opposing one another when closed; maxillary and labial palpi (according to Kieffer 1916 a: 16) 4-segmented; antennal ledge lying at center of face. Antenna usually longer than body, shining and with scattered erect hairs on scape and segment 2, mat and densely covered with short recumbent hairs on remaining segments; scape slightly curved in dorsal and frontal views, compressed toward base, quite narrowly subtriangular in dorsal and ventral views, and evenly broad in frontal view, its dorsal surface roundly edged, basally slightly thinner and somewhat lamina-like; ventral surface with a sharp, Y-shaped carina extending from base to apex and bearing the semitransparent lamina. Antennal segment 2 subglobular, wider near apex, nearly as long as wide; 3 subcylindrical, slightly narrowed basad; 4–12 cylindrical, usually about 2 × as long as wide, subequal in length to one another; 13 more or less compressed at extreme apex, always longer than any other flagellar segment. Cervical plate ventrally supported by a strong projection which embraces foramen magnum and arises from middle of hypostomal bridge. Membranous laminae around neck and collar all transparent, densely striate, pale yellowish to golden, of appearance of matted or woolly pubescence; occipital lamina much longer and wider than that on prothorax, arising from carina between postgena and gena, extending to side of cervical plate and projecting toward anterior surface of prothorax; pronotal lamina arising from margin of its anterolateral corner, quite short and narrow, projecting cephalad; propleural lamina also narrow and projecting cephalad, rather long, arising from a vertical carina at side. Pronotum lacking median sulcus, anteriorly slightly raised and with a submarginal transverse furrow to fit apical margin of cervical plate; posterior angle acute, not raised, projecting caudad; posterior margin weakly bisinuate. Mesoscutum transverse, slightly narrowed caudad; posterior angle projecting caudad and partly overlapping axilla. Scutellum gently sloping down to metanotum, lacking cup-like depressions. Metanotum very short. Propleuron large, bisected by a carina (which bears membranous lamina) into lateral and anteroventral surfaces. Mesopleuron simple, unsculptured. Tegula quite large, long, apically truncate, reaching level of posterior margin of scutellum. Propodeum weakly convex, sometimes basally with a short carina to separate it from metapleuron; calyptra-like covering of spiracle very large, widely opened behind. Forewing not shorter than body, about 2.5 × as long as wide, minutely haired on surface, and when in repose, not folding longitudinally but horizontally overlapping one another; apical 2/3 with several faint, colorless, concave, gently curved lines; longitudinal veins all free-ended; costa entirely absent; subcosta rather distant from costal margin, its apical abscissa short, oblique, sometimes absent; basal vein, except at extreme distal end, subparallel to subcosta and proximally in line with medial or nearly so, sometimes weakly developed or apically incomplete; radial oblique, branched off from subcosta slightly apicad to basi-

median cell and nearly perpendicular to apical abscissa of subcosta; medial short, slightly oblique; humeral only $1/2$ as long as basimedial cell; basimedial cell elongate, broadest near middle, usually closed; basicubital cell widely open at apex. Hindwing much smaller and shorter than forewing, ciliate on apical and anal margins, with, besides jugal fold, 2 faint concave lines near base and about 5–7 hamuli near apex, proximal series of hamulus-like bristles wanting. Legs long, fairly slender; all femora similar in shape, but membranous lamina much larger on hind femur; tibial spurs 1–2–2; dorsum of hind tibia flattened, with 1 series of ordinary long hairs on exterior (anterior) margin, and 2 series (one of ordinary, another of spatulate hairs) on interior margin; tarsal claw with a sub-basal tooth. Abdomen hardly longer than wide, not longer, hardly wider and less sclerotized than thorax, rather flattened, but laterally not sharply margined, widest at base of tergite 4 (2nd visible), strongly narrowed toward both ends, in profile subtriangular in outline; petiole formed by tergite 2 plus sternite 2; tergite 3 descending basad, in profile almost perpendicular to 4; 4 very large, trapezoid; 6 in ♂ triangular, curved ventrad, apically acute; sternites 3 + 4 much larger and longer than 5; ♂ genitalia very small, of generalized type of Bethyloidea.

RANGE: Oriental region (Vietnam, 1 species; Singapore, 4; Borneo, 5; Palawan, 1; Mindanao, 5; Basilan, 2; Sibuyan, 1; Sula, 1; New Britain, 2), altogether 17 species, all found in lowland. Many more species are expected to occur in other islands linking Malay Peninsula and Bismarck Archipelago.

BIOLOGY: Unknown. Fouts (1922: 619) suggested that they are probably myrmecophilous, since they have the habitus of ants and the woolly appearance of the neck is characteristic of many myrmecophiles. The wings are ample but are so delicate and have short weak veins and the tegulae are so large that they are unlikely to be good fliers.

Besides the relative length of antennal segments and veins, the most important characters for differentiating the species are the shape of the antennal ledge, cervical plate and antennal, femoral and tibial laminae. The genus is here divided into two subgenera.

KEY TO SUBGENERA OF LOBOSCELIDIA

- Cheek broader than eye; eye sparsely covered with long erect hairs; frons with a reticulate area which includes antennal bases and is clearly and completely delimited by a sharp carina passing close to eyes and to median ocellus; cervical plate triangular; antenna shorter than body, segments 6–12 each shorter than broad, 13 as long as broad; pronotum reticulate **Scelidoloba**
- Cheek not broader, usually much narrower than eye; eye naked; frons smooth or nearly smooth, never with such a reticulate area as described above; cervical plate quadrate; antenna longer than body, segments 6–13 each longer than broad (usually about $2 \times$ or more as long as broad); pronotum smooth... **Loboscelidia**, *s. s.*

Subgenus **Scelidoloba** Maa and Yoshimoto, n. subgen.

Characters as given in the above key.

TYPE OF SUBGENUS: *Loboscelidia antennata* Fouts, by present designation.

We have not studied the type species, but from the original description, it clearly re-

presents a distinct group. Fouts (1922: 622) even suggested it might be assigned to an independent genus. At present, this subgenus includes only the type species. The name *Scelidoloba* is an anagram of *Loboscelidia*.

Subgenus *Loboscelidia* Westw., s. s.

Characters as given in the key. Type of subgenus same as of genus.

Members of this subgenus probably can be allocated into several species groups. As mentioned below, the two New Britain species have some important characters in common which are not found in most of the other species. The following key is, however, partly compiled from the literature and we do not attempt to divide the described species into groups.

KEY TO SPECIES OF *LOBOSCELIDIA*, s. s.

1. Parapsidal furrow complete, reaching posterior margin of mesoscutum..... 2
 Parapsidal furrow incomplete, its posterior 1/3 or 1/4 not recognizable, thus
 the furrow never reaching posterior margin of mesoscutum..... 8
- 2 (1). Basal vein hardly recognizable, only briefly indicated at either end and/or by
 color; tegula dorsally with scattered hairs; axilla pit-like 3
 Basal vein complete and evenly strong; tegula dorsally hairless; axilla not
 pit-like 4
- 3 (2). Cervical plate as long as wide; median mesoscutal lobe 2 × as long as wide;
 pronotum with sharp dorsolateral carinae..... **bakeri**
 Cervical plate distinctly longer than wide; median mesoscutal lobe hardly
 longer than wide at base; pronotum rounded-off dorsolaterally **reducta**
- 4 (2). Scutellum longitudinally striate (posterior 1/4 seldom punctate); median length
 of pronotum much smaller than maximum breadth 5
 Scutellum unsculptured or faintly micropunctate, when occasionally with longi-
 tudinal striae, they are short, restricted to posterior part and intermingling
 with predominant micropunctures; median length and maximum breadth of
 pronotum subequal 6
- 5 (4). Mesoscutum distinctly shorter than scutellum, its median lobe densely micro-
 punctate; tegula in profile much shorter than pronotum **collaris**
 Mesoscutum about as long as scutellum, its median lobe polished; tegula in
 profile as long as pronotum..... **scutellata**
- 6 (4). Cervical plate broader than long; frons polished, shining; 3rd abscissa of
 subcosta present..... **brunnea**
 Cervical plate shorter than broad; frons micro-alutaceous; 3rd abscissa of
 subcosta absent 7
- 7 (6). Length 1.8–2.3 mm; antenna light brown; axilla separated from scutellum
 proper by a rather distinct groove **defecta**
 Length 3.0 mm; antenna blackish; axilla separated from scutellum proper by
 a sharply defined groove **nigricornis**
- 8 (1). Antennal ledge double layered and in profile, anteriorly obliquely truncate or
 slightly emarginate 9

- Antennal ledge single layered and in profile, anteriorly acute 15
- 9 (8). Cheek about as broad as eye, slightly broadened upward, sparsely covered with short club-shaped hairs..... 10
- Cheek distinctly narrower than eye, distinctly narrowed upward, with only fine ordinary hairs 11
- 10 (9). Face above with a short median carina; forewing with a yellowish fascia across middle; basal vein bow-shaped, not distinctly angulate..... **carinata**
- Face above with an inconspicuous median furrow; forewing with conspicuous brown spots and streaks; basal vein slightly bent at distal 2/5..... **maculipennis**
- 11 (9). Membranous lamina of hind femur long and evenly broad, slightly narrowed at both ends, about 7/9 as long as the femur; 2nd abscissa of subcosta shorter than 3rd abscissa..... **inermis**
- Membranous lamina of hind femur not as above, either long and strongly narrowed basad, or short and not evenly broad; 2nd abscissa of subcosta longer than 3rd abscissa 12
- 12 (11). Membranous lamina of hind femur short, only about 1/2 as long as the latter; cervical plate hardly longer than broad **rufescens**
- Membranous lamina of hind femur long, almost as long as the latter; cervical plate much longer than broad..... 13
- 13 (12). Antenna nearly 2 × as long as body, its flagellar segments each about 3 × as long as wide, 12th and 13th segments practically equal in length, scape hardly longer than next 2 segments united, lamina linear, inconspicuous; pronotum convex..... **nigra**
- Antenna at most 2/5 longer than body, its flagellar segments each about 2 × as long as wide, 12th segment much shorter than 13th, scape nearly as long as next 3 segments united, lamina broad and conspicuous 14
- 14 (13). Axilla obliquely striate, not raised laterally; pronotum convex; posterior 1/3 of parapsidal furrow not recognizable **rufa**
- Axilla smooth or micro-alutaceous, strongly raised laterally; pronotum longitudinally concave; posterior 1/4 of parapsidal furrow not recognizable **philippinensis**
- 15 (8). Cervical plate distinctly longer than broad, lacking sub-basal constriction; apical abscissa of subcosta well developed; membranous lamina of hind femur (fig. 5, c) triangular, small..... **parva**
- Cervical plate as long as broad, with a distinct sub-basal constriction; apical abscissa of subcosta vestigial; membranous lamina of hind femur (fig. 5, d) subquadrate, quite large **cervix**

Loboscelidia (Loboscelidia) rufescens Westwood Fig. 1d, e.

Loboscelidia rufescens Westwood 1874: 172, pl. 20 (13), ♀. Sula Is. (Oxford Univ.).—Dalla Torre 1898: 431 (list, under emended generic name *Loboscelidoidea*).—Kieffer 1916 a: 15, fig. 6, ♀ (key, reproduction of Westwood's descr. & fig.); 1916 b: 399 (key).—Fouts 1922: 619 (key).

This species has been improperly placed in keys by Kieffer and Fouts (*l. c.*) who were misled by Westwood's (*l. c.*) figure. They presumed that the antennal ledge is horn-like,

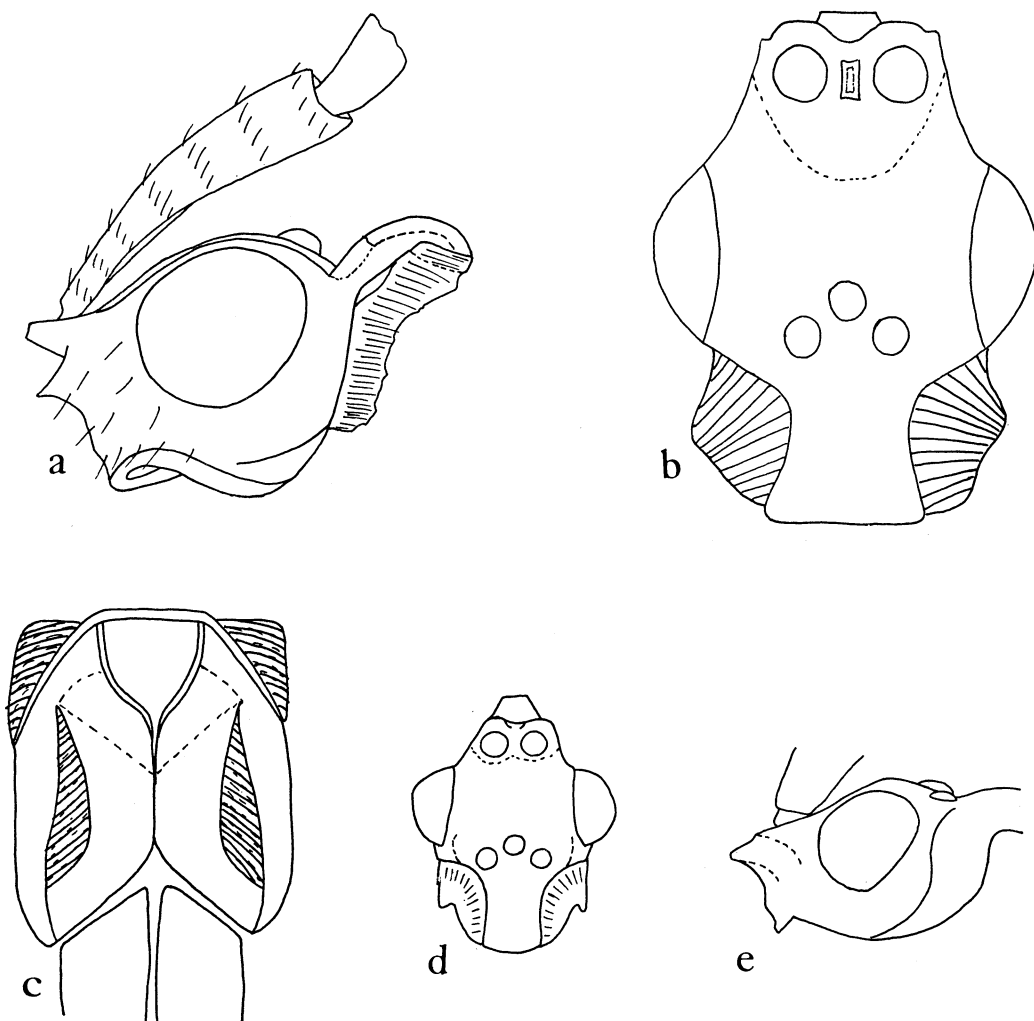


Fig. 1. *Loboscelidia*, head and prothorax showing antennal ledge, cervical plate and membranous laminae on neck and collar. a, *L. bakeri* Fouts, ♂ from Paring, head, side view; b, same, head, dorsal view; c, same, prothorax, frontal view; d, *L. rufescens* Westw., lectotype ♀, head in dorsal view; e, same, side view. (Figs. d and e by M. W. R. de V. Graham; e not drawn to scale).

projecting forward to an unusual degree, and is markedly different from that in other species. The type locality was wrongly cited by Dalla Torre (*l. c.*) as "Am.: Sulu Is." and by Kieffer as Sulu Is. of the Philippine Archipelago. Upon our request, Dr. M. W. R. de V. Graham of the Department of Entomology, University Museum, Oxford very kindly examined the types, made two new drawings and gave some informative notes which are, with his permission, presented below:

"I can find no specimens in the Oxford collection actually labelled with the species

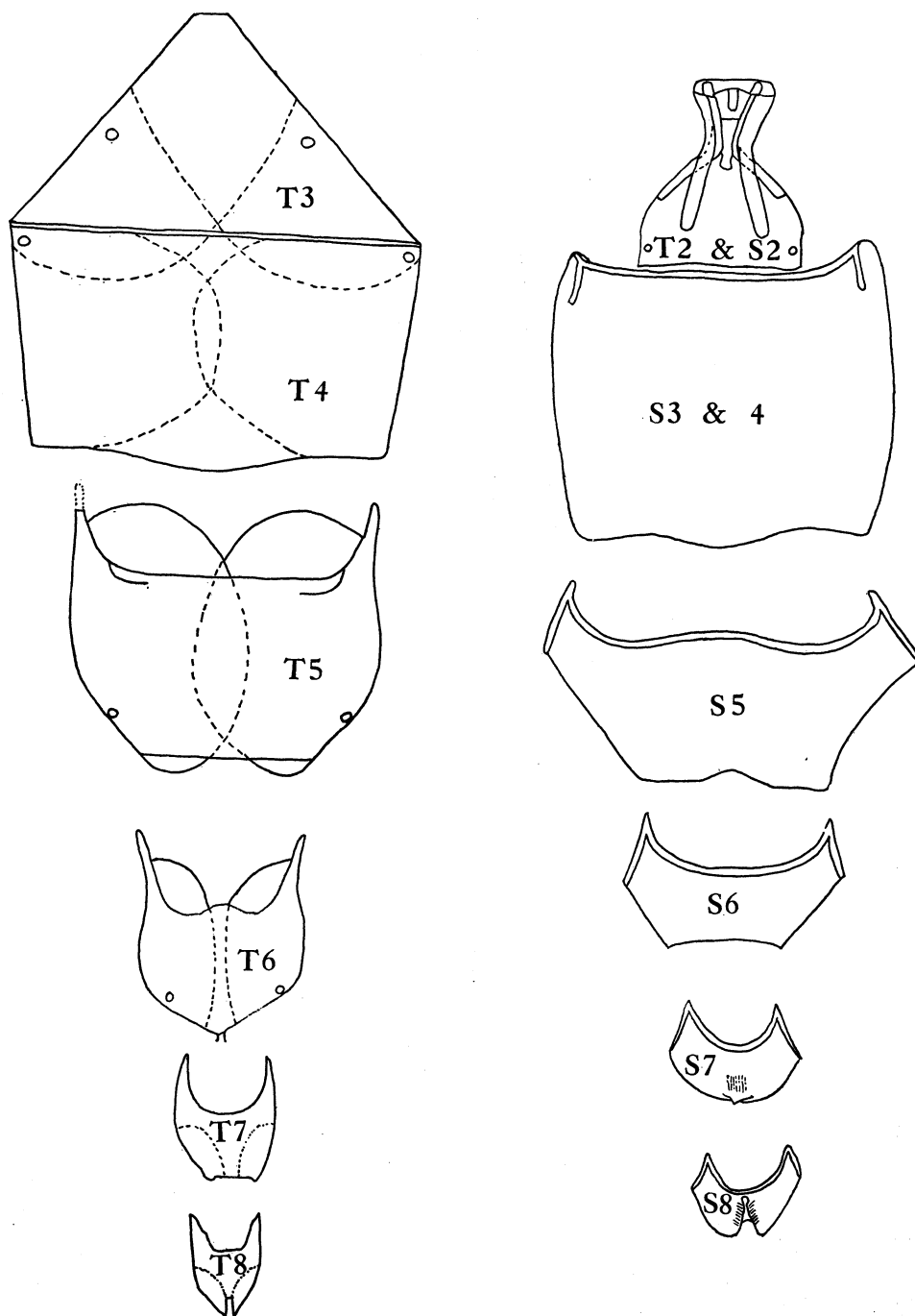


Fig. 2. *Loboscelidia bakeri* Fouts, ♂ from Paring, abdominal tergites and sternites (camera lucida drawings from slide preparation). T, tergite; S, sternite.

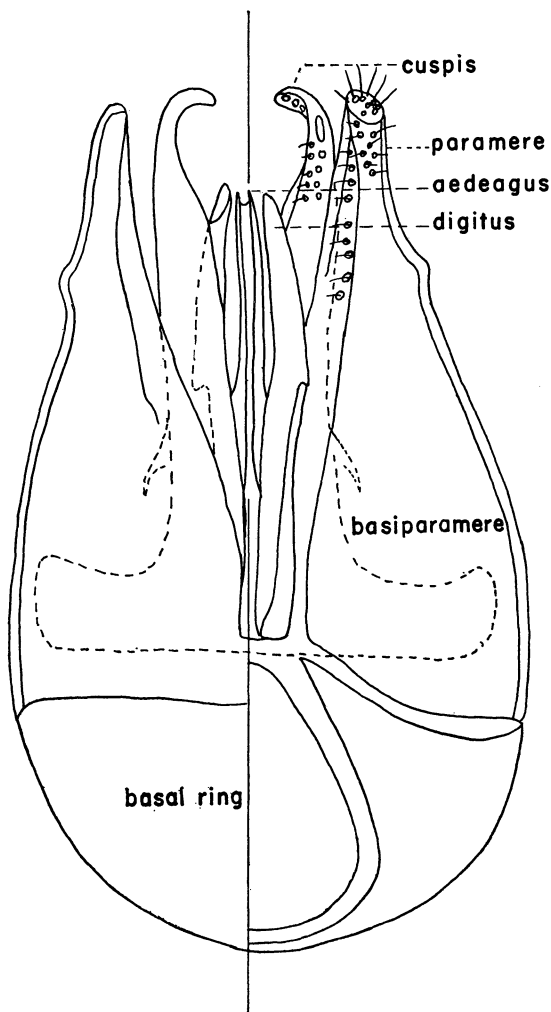


Fig. 3. *Loboscelidia bakeri* Fouts, ♂ from Parang, genitalia in dorsal (left half) and ventral views (right half).

name, but there are two specimens standing next to each other which agree with the description and must be the syntypes. They are apparently females and appear to be conspecific. The first specimen, which is most likely the lectotype, bears two labels, one is circular and was written "Sul" and another is transversely rectangular and with Westwood's handwriting "Sula isld. Celebes, Wallace, Higgins 1868 9d." It is evidently bought in a sale (for 9 pence!). The mouthparts were dissected out on a card. The second specimen has only a circular "Sul" label.

"The compound eyes are hairless. No hairs are visible at magnification of 100 X. The antennae are located on an antennal ledge which lies below antennal fossae. The

parapsidal furrows are present. The pin in the lectotype goes through the middle of the mesoscutum, but the left-hand furrow is visible, well defined, nearly (but not quite) reaching the hind margin. The tegulae posteriorly extend about to the level of hind margin of scutellum. The femora and tibiae have distinct membranous laminae (very broad on hind femora and tibiae) as Kieffer says."

Loboscelidia (Loboscelidia) defecta Kieffer Figs. 4a, 5a.

Loboscelidia defecta Kieffer 1916 a: 18, fig. 6e, ♂ ♀ (Palawan: Puerto Princesa); 1916 b: 401, ♂ ♀ (as n. sp.).—Fouts 1922: 620 & 626 (key, color and venational variation; Singapore and N. Borneo records).—Snodgrass 1941: 39, pl. 10 (A, B) (♂ genitalia).

Male: Length 2.3 mm, to wing apex 4.3. Reddish brown; forewing with brownish spots and streaks as illustrated by Kieffer (*l. c.*).

Head micro-alutaceous, narrower than thorax including tegulae (32 : 37); lower portion of face with scattered hairs, lacking median carina but at each side with 3 slightly oblique submedian carinae radiating ventrolaterad from antennal ledge and almost reaching clypeolabral suture; interstices of these carinae and particularly area outside of outermost carina distinctly depressed; lateral carina of face running from near malar space to occipital margin, its lower portion very weak and close to inner eye-margin, upper portion fairly sharp; upper portion of face hairless, flattened, with hardly discernible median carina; median ocellus anteriorly lying in a deep but not rimmed triangular depression, slightly less than its diameter distant from lateral ocellus; lateral ocelli about their diameter distant from occipital margin; ratio of their diameter, their interdistance (POL) and distance

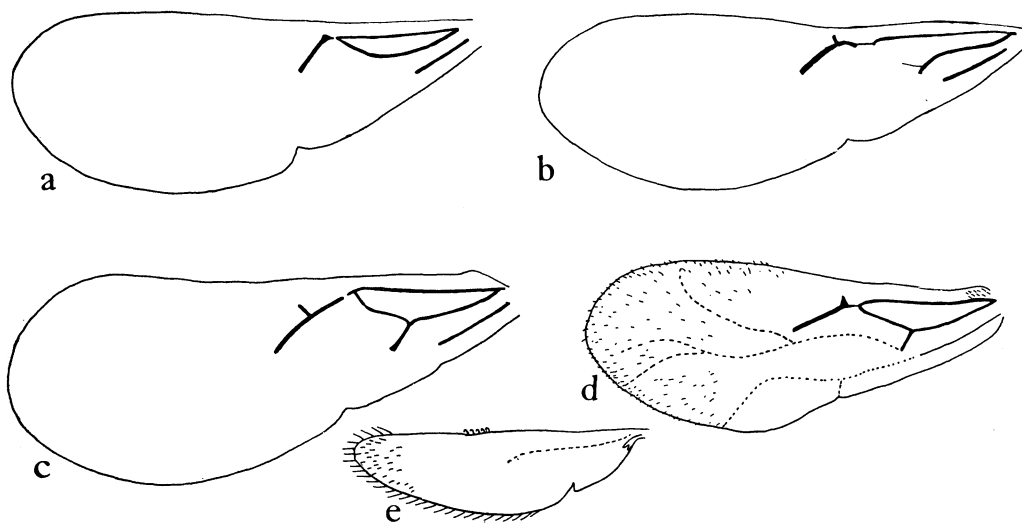


Fig. 4. *Loboscelidia*, fore (a to d) and hind wings (e). a, *L. defecta* Kieff. ♂ from Sandakan; b, *L. bakeri* Fouts, ♂ from Paring; c, *L. parva* n. sp., holotype ♂; d and e, *L. cervix* n. sp., holotype ♂. (All camera lucida drawings and in same scale; a to c, from pinned specimens, hairs and cilia omitted; d and e, from slide preparation).

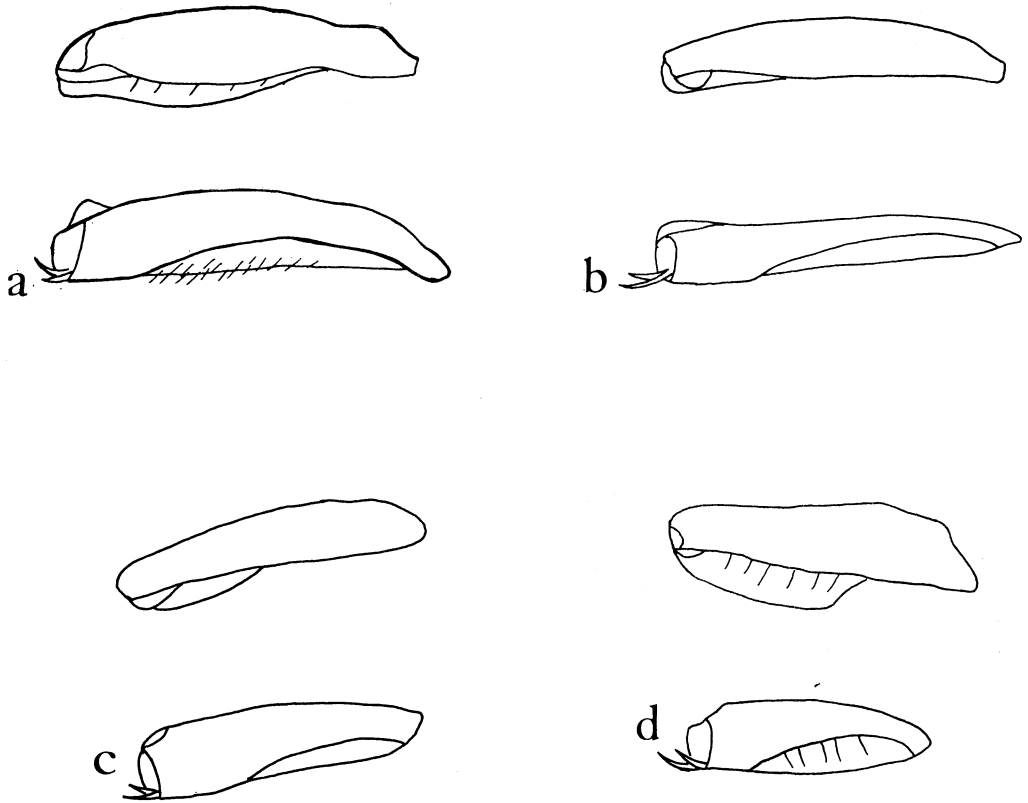


Fig. 5. *Loboscelidia*, hind femora and tibiae in side view, showing size of, and striae and hairs on membranous laminae (other hairs omitted). a, *L. defecta* Kieff., ♂ from Sandakan; b, *L. bakeri* Fouts, ♂ from Paring; c, *L. parva* n. sp., holotype ♂; d, *L. cervix* n. sp., holotype ♂. (All camera lucida drawings, from slide preparations, in same scale).

to eye (OOL) $3\frac{1}{2} : 5 : 5\frac{1}{2}$; eye an ocellar diameter distant from occipital margin; cheek narrower than eye (6:13), strongly narrowed upward, with few short hairs near occipital carina. Antennal ledge 2-layered; when viewed from above, superior projection bilobed, weakly emarginate anteriorly, inferior projection subtruncate, more protruding forward than and about $\frac{1}{2}$ as wide as superior projection; in frontal view, superior projection horizontal, inferior projection broadly U-shaped, both appearing like very high and sharp transverse carinae; in lateral view, superior and inferior projections fused and forming together a quadrate, apically truncate process. Cervical plate $10\frac{1}{2} \times 8$, smooth, hairless, evenly, exceedingly strongly arched; its lateral margins in dorsal view straight except at extreme base, gently convergent forward; median area slightly depressed longitudinally; profile depth about $\frac{1}{3}$ of length. Antenna much longer than body; scape 27×7 , with few moderately long erect hairs, its lamina elongate triangular, much shorter than and about $\frac{1}{3}$ as wide as scape proper, lacking spatulate hairs, apically acuminate; segment 2, 4×5 ; 3, 12×6 , not shorter but slightly wider than 4; 13, 16×4 , its apex distinctly compressed, narrowly rounded in dorsal aspect and acute in profile; other segments similar in

length to 3 but successively diminishing in width toward 12. Pronotum 28×28 , arched cephalad, posteriorly with a faint inverted Y-shaped fovea, anterior vs. posterior width 21 : 28; anterior angle strongly flattened, narrowly rounded; lateral margin in dorsal view virtually straight, moderately carinate throughout. Mesoscutum 12×24 , with few short hairs and at anterior angle and along parapsidal furrow with some micropunctures, elsewhere smooth; parapsidal furrows complete, straight, parallel to one another; median and lateral lobes subequal in width, former more distinctly depressed longitudinally than latter; lateral lobe abruptly separated from its marginal slope by a sharp complete carina, otherwise unsculptured. Scutellum 13×20 , densely micropunctate, with a few long hairs, posterior $1/3$ intermixed with longitudinal microstriae; axilla raised, demarcated by an oblique, fairly distinct suture. Tegula with scattered short hairs, largely smooth, lateral surface faintly micro-alutaceous, in lateral view shorter than pronotum (22 : 28). Propodeum with scattered short hairs, basally separated from metapleuron by a short fine carina. Forewing not ciliate; basal vein complete, distinct, evenly curved; apical abscissa of subcosta and of medial each represented by a hardly defined stub; basimedial cell less than $1/3$ as long as wing, apically acute; relative length of veins as in fig. 4, a. Hind femur and tibia as in fig. 5, a; membranous lamina of hind femur long, lanceolate; relative lengths of segments of hind tarsus 14 : $6\frac{1}{2}$: $5\frac{1}{2}$: $4\frac{1}{2}$: 8. Abdominal tergite 4 with basal vs. apical width in ratio 41 : 21; 5 unsculptured; 6 faintly micro-alutaceous. Genitalia as figured by Snodgrass (*l. c.*).

Female: Unknown to us.

MATERIAL EXAMINED: N. BORNEO: 1 ♂, Sandakan Bay SW, Sepilok Forest Reserve, 1–10 m, 31–X–1957, J. L. Gressitt.

The single specimen before us does not exactly fit Kieffer's descriptions, in which the pronotum was said to be "hinten mit einer schwachen, bogigen Querlinie, die ein queres, elliptisches Feld begrenzt," parapsidal furrows "vorn kaum divergierenden," axilla "in derselben Ebene liegen wie die übrige Fläche" and the radial vein was drawn as if hardly longer than basal. While following Fouts' (*l. c.*) interpretation and provisionally referring the Bornean specimen to *defecta*, we expect that comparison with the topotypic material from Palawan may reveal further difference. The whereabouts of the type of this species is unknown.

Loboscelidia (Loboscelidia) reducta Maa and Yoshimoto, n. sp. Fig. 7.

Male: Length 2.2–2.6 mm, to forewing apices 3.7–4.2. Dark castaneous (black under natural light), paler at antenna and legs and darker at head, mesoscutum, propodeum and abdominal tergite 4. Forewing hardly stained with fuscous, darkest (blackish) along both sides of radius and apical part of subcosta, almost colorless at curved apical concave lines, with 4 grey narrow streaks at apical $1/2$; 1st streak lying at costal side of 1st concave line and reaching costal margin; 2nd, at anal side of same line, apically broadened and before reaching costal margin, curving analward and parallel to apical margin; 3rd, linear, at costal side of 3rd concave line; 4th, also linear, gently curved, starting from apex of claval furrow; basal markings similar to those in *L. inermis*, but less distinct; subcosta and radius blackish, other veins brownish.

Hairs on lower part of face, cheek, antennal scape, pronotum, scutellum and tegula scattered, moderately short, not erect, not club-shaped. Head narrower than thorax including tegulae

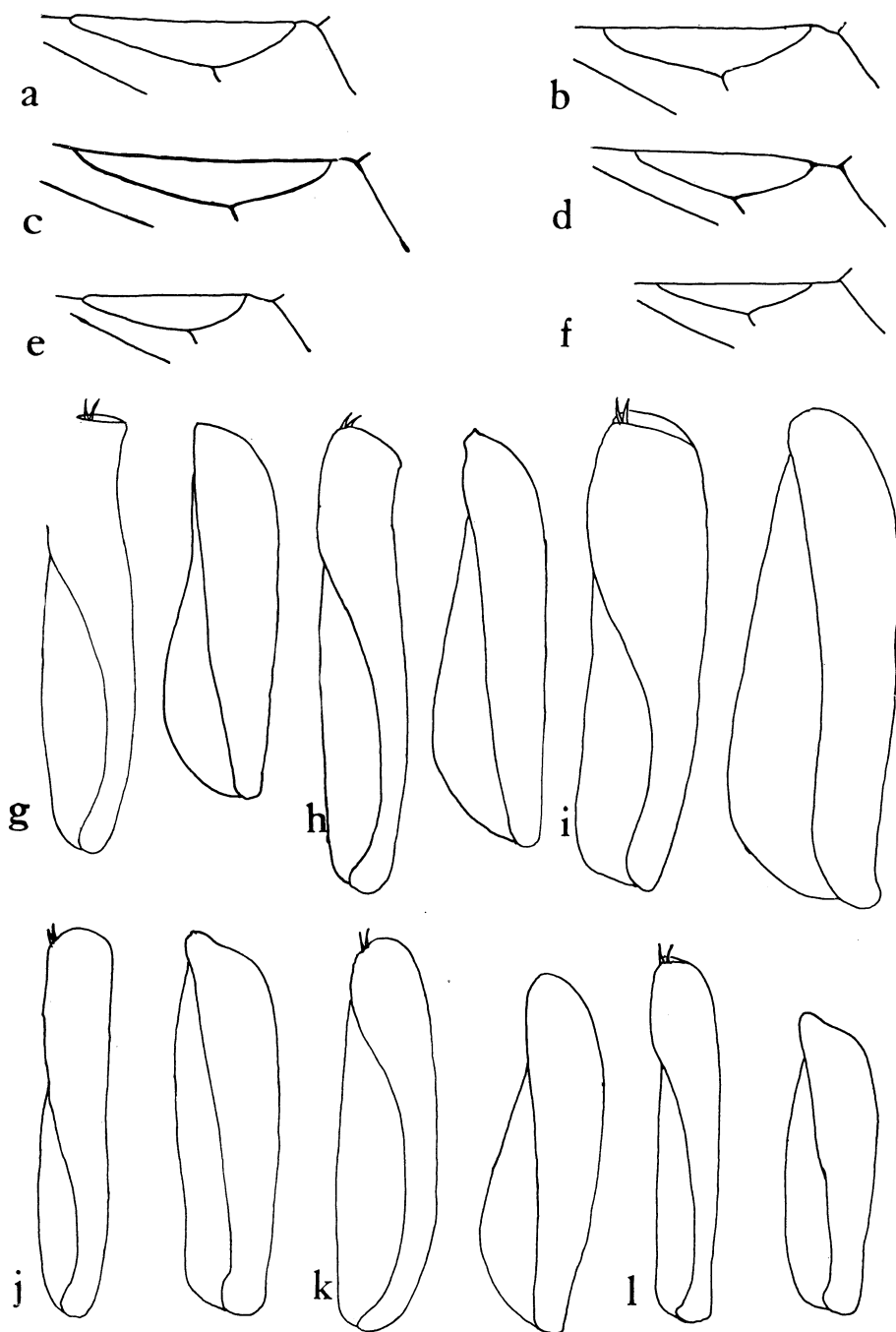


Fig. 6. *Loboscelidia*, forewing venation (a-f) and hind femora (at right) and tibiae (at left) in side view (g-l, striae and hairs omitted). a, g, *L. philippinensis* Fouts, paratype ♂; b, h, same, ♂ from Zamboanga del Norte, Mindanao; c, i, *L. rufa* Fouts, ♂ from Sibuyan I.; d, j, *L. nigra* Fouts, paratype ♂; e, k, *L. collaris* Fouts, ♂ from Borneo; f, l, *L. scutellata* Fouts, paratype ♂. (All drawn from pinned specimens by using a grid; forewings and legs, respectively, in same scale).

(25 : 29); lower part of face smooth, weakly convex, with a strong oblique carina at each side, few scattered punctures, no trace of median carina, no transverse striae except near lower margin of clypeus; area outside of oblique carina strongly depressed, obliquely striate; upper part of face and position of ocelli similar to that in *L. bakeri*; cheek narrower than eye (6 : 10), gently narrowed upward. Antennal ledge similar to that in *bakeri*, but when viewed from above, lobes of superior projection apically almost truncate, inferior projection truncate or weakly emarginate. Cervical plate narrowest near base, longitudinally concave, ratio of length and minimum and apical breadths 9 : 5 : 7; lateral margin straight; in profile, superior margin in an even curve, depth about 1/4 of length. Antenna about 1/3 longer than body; scape 19×5; lamina as in *bakeri*; segment 2, 4×4; 3, 8.5×4; 4, 9×4; 13, 14×4, apex subacute in profile. Pronotum convex, ratio of length and anterior and posterior breadths 19 : 16 : 24; lateral margin straight in dorsal aspect, rounded-off laterad and cephalad; anterior angle broadly rounded. Mesoscutum 10×20, concave, largely smooth; parapsidal furrows complete, slightly divergent at both ends; median lobe hardly longer than broad (10 : 9), much broader than lateral lobe, which is similarly sculptured as in *bakeri*. Scutellum 9×14, anterior 2/3 concave and micro-alutaceous; axilla and metanotum as in *bakeri*. Profile length of tegula and pronotum 15 : 20. Venation as in fig. 7, a. Hind femur and tibia as in fig. 7, b and c; tibial lamina vestigial. Abdominal tergite 4 with ratio of basal and apical breadths 30 : 25; 5 largely smooth, with a transverse series of setigerous punctures across middle; 6 nearly as long as wide at base, with scattered, moderately short hairs.

Female: Unknown.

VIETNAM: Holotype ♂ (BISHOP), Dai Lanh, N of Nha Trang, 30-XI to 5-XII-1960, C. M. Yoshimoto. Paratypes: 1 ♂ (BISHOP), same data; 17 km S of Dilinh, 1300 m, 6 to 13-X-1960, Yoshimoto; 1 ♂ (BISHOP), Dalat, 1500 m, 26 to 27-IX-1960, Yoshimoto.

This species is closely related to the next, *L. bakeri*. The latter is chiefly characterized by the nearly quadrate cervical plate, laterally strongly carinate pronotum, elongate median mesoscutal lobe, hairless tergite 5, and much longer erect hairs on head and thorax. The name *reducta* refers to the short body hairs, abbreviate basal vein and vestigial hind tibial lamina.

The hind tibial lamina is somewhat variable within this species. The paratype from

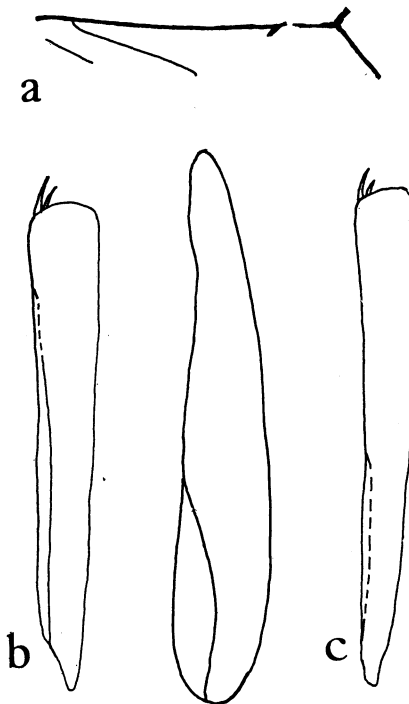


Fig. 7. *Loboscelidia reducta* n. sp. a, forewing venation, paratype ♂ from Dalat (drawn from pinned specimen by using a grid); b, hind femur and tibia, paratype ♂ from Dalat; c, hind femur and tibia, paratype ♂ from Dilinh (both b and c drawn from slide preparation).

Dalat (fig. 7, b) is rather normal in this respect although the basal part is not clearly defined. In the other two specimens (fig. 7, c), it can only be recognized by the indication of striation in the cleared slide preparation under a strong light.

Loboscelidia (Loboscelidia) bakeri Fouts Figs. 1a-c, 2, 3, 4b, 5b.

Loboscelidia bakeri Fouts 1922: 620, ♂. Borneo: Sandakan (USNM).

Male: Long scattered (some club-shaped) hairs present on upper part (along lateral carina) and lower part of face, cheek, antennal scape, pronotum, scutellum and tegula. Head narrower than thorax including tegulae (33 : 39); lower part of face with 3 carinae extending from antennal ledge to clypeo-labral suture, lateral one oblique and stronger than median carina; area outside of lateral carina shining, strongly depressed; area inside of same obliquely striate; upper part of face micro-alutaceous, its lateral carina very close to eye-margin, sharp, reaching occipital margin; lateral ocellus about 1/2 its diameter distant from median ocellus; occipital margin slightly more than one ocellar diameter distant from lateral ocellus or eye; ratio of ocellar diameter, POL and OOL 3 : 5 : 5; cheek about 1/2 as wide as eye (6.5 : 12), gently narrowed upward. Antennal ledge 2-layered; in profile apically truncate and as wide as antennal segment 3; in frontal view, similar to that in *L. rufa*; when viewed from above, lobes of superior projection about 2 × as wide as their interspace and apically broadly rounded, inferior projection apically emarginate. Cervical plate narrowest near base, ratio of length and minimum and apical breadths 10 : 9 : 10.5, with almost straight lateral margin; in profile, deepest behind middle, depth about 2/5 of length. Cervical membranes striate, slightly overlapping one another. Antenna about 1/3 longer than body; scape 28 × 7; lamina lanceolate, about 1/2 as wide as basal part of scape proper, apically linear; segment 2, 4 × 5; 3, 12 × 5; 4, same; 13, 15 × 5, apex compressed, acute in profile. Pronotum convex, ratio of length and anterior and posterior breadths 28 : 21 : 30; lateral margin straight in dorsal aspect, sharply carinate; anterior angle acute. Mesoscutum 15 × 25, weakly convex; parapsidal furrows straight, complete, parallel; lateral lobe anteriorly slightly broader than median lobe, which is 2 × as long as wide. Scutellum 12 × 19, concave; axilla deeply dimpled, laterally strongly raised. Metanotum micropunctate, transversely raised, no median carina. Relative profile lengths of tegula and pronotum 21 : 31. Venation as in fig. 4, b. Hind femur and tibia as in fig. 5, b; relative lengths of segments of hind tarsus 13 : 6 : 5 : 5 : 8. Abdominal tergite 4 with ratio of basal and apical breadths 43 : 30; tergite 5 smooth; 6 micropunctate. Genitalia as in fig. 3. Other characters as in original description.

MATERIAL EXAMINED: N. BORNEO: 1 ♂ (USNM), Sandakan, C. F. Baker; 1 ♂ (BISHOP), Paring Hot Spring, 12 km N. of Ranau, 500 m, 8 to 11-X-1958, T. C. Maa. The original description of this species is somewhat misleading, the face was said to be lacking lateral carina; antennal ledge seen from side without an inferior projection; cervical membranes just meeting, not overlapping, apparently without "pubescence"; last antennal segment apically sharply pointed; etc.

Loboscelidia (Loboscelidia) philippinensis Fouts Fig. 6a, b, g, h.

Loboscelidia philippinensis Fouts 1922: 623, ♂ (wrongly stated as ♀). Mindanao: Iligan

& Kolambugan (USNM).

Male: Length 3.5 mm, to forewing apices 5.3. Head much narrower than thorax including tegulae (37:51); lower part of face slightly convex, with scattered hairs and sharp undulating transverse rugae, no median carina, but laterally with a distinct longitudinal carina; upper part of face micro-alutaceous, its lateral carina rather sharp, extending from antennal ledge to occipital margin; median ocellus about 1/2 its diameter distant from lateral ocellus; ratio of ocellar diameter, POL and OOL 4:5:8; eye about 2 × ocellar diameter distant from occipital margin; cheek narrower than eye (10:13), weakly narrowed upward. Antennal ledge 2-layered; in profile, apically truncate, about 2/3 as wide as antennal segment 3; in frontal view, superior projection horizontal, inferior projection broadly V-shaped; when viewed from above, lobes of superior projection apically rounded and apart from each other, inferior projection apically subacute. Cervical plate longitudinally concave, ratio of length and minimum and apical breadths 15:8:10; lateral margin evenly curved, weakly divergent at both ends; profile depth 1/3 of length. Antenna about 1/5 longer than body; scape 31 × 11, slightly narrowed basad; lamina subrectangular, about 2/3 as wide as basal part of scape proper; segment 2, 6 × 7; 3, 15 × 8; 4, 14 × 7; 13, 16 × 6, subacute at apex in profile. Pronotum smooth, broadly concave at median area, ratio of length and anterior and posterior breadths 34:24:37; anterior angle broadly rounded; lateral margin straight in dorsal view, weakly carinate. Mesoscutum 15 × 35, anterior and lateral margins densely micropunctate; median lobe largely smooth, no median carina; lateral lobe narrower than median lobe (breadths across middle 9:13), with 2 weak longitudinal depressions near middle, feebly carinate at outside; parapsidal furrows slightly divergent cephalad, not recognizable at posterior 1/3. Scutellum 15 × 25, flattened, largely smooth, posteriorly striate at side; axilla also flattened and smooth, laterally raised. Profile depth of tegula and pronotum 26:32. Venation as in fig. 6, a. Legs of same color as body; hind femur and tibia as in fig. 6, g; relative lengths of segments of hind tarsus 19:8:6:5:10. Abdominal tergite 4 with ratio of basal and apical breadths 58:41; tergite 5 largely smooth; 6 micropunctate. Other characters as in original description.

MATERIAL EXAMINED: PHILIPPINES: 1 ♂ paratype (USNM), Kolambugan, Mindanao; 1 ♂ (BISHOP), Zamboanga del Norte, 680 m, primary forest, 15 km S of Manucan, 14 to 15-X-1959, L. W. Quate.

The paratype differs from the original description in having basal vein apically gently curved, not forming a "sharp bend and entering subcosta nearly at right angle." The Zamboanga specimen differs from the paratype in several points: lower part of face lacking longitudinal carina at side, but an oblique one originating from midpoint of bottom of antennal ledge; ocelli very prominent, median ocellus 1/3 its diameter distant from lateral ocellus; superior and inferior projections of antennal ledge, in frontal view, very close to each other, both broadly U-shaped, subparallel at middle and merged at side; mesoscutum with a faint median carina; scutellum finely striate, posteriorly intermixed with punctures; axilla concave, micro-alutaceous; legs tinged with yellow; femoral lamina (fig. 6, h) broader; abdominal tergite 5 micro-alutaceous.

From description, this species is hardly separable from *L. inermis* which is also known only from Mindanao. The latter is placed in the key by strength of Kieffer's figures.

Loboscelidia (Loboscelidia) rufa Fouts Fig. 6c, i.

Loboscelidia rufa Fouts 1925: 517, sex (?). Sibuyan I. (USNM).

Male: Length 4.2 mm, to apices of forewings 6.0. Head micro-alutaceous, much narrower than thorax including tegulae (45 : 70); lower part of face convex, with coarse rugae which are arcuate at disc, oblique at side and transverse at lower margin, no median carina; malar space with transverse microstriae; upper part of face flattened, its lateral carina moderately weak, running from antennal ledge to occipital margin; lateral ocelli about 1/2 their diameter distant from occipital margin, ratio of their diameter, POL and OOL 5 : 7 : 7; eye about an ocellar diameter distant from occipital margin; cheek narrower than eye (11 : 18), strongly narrowed upward. Antennal ledge 2-layered; when viewed from above, lobes of superior projection broadly rounded and widely separated from each other, inferior projection anteriorly truncate; in profile, similar to that in Fouts' (1922: 625, fig. 1) figure for *L. maculipennis*; in frontal view, lower section of inferior projection apart from and 1/2 as long as superior projection, lateral sections of same, oblique, straight and distinctly angulate with lower section. Cervical plate 21 × 13 (minimum breadth 10), evenly arched, its lateral margins straight, feebly convergent forward, profile depth about 1/4 of length. Antenna about 2/5 longer than body; scape 32 × 12, evenly broad; lamina with scattered hairs, slightly narrowed apicad, as long as scape proper and about 1/2 as broad as basal part of latter; segment 2, 5 × 8; 3, 17 × 9; 4, 20 × 9; 13, 22 × 7, apex narrowly rounded in profile. Pronotum flattened, ratio of length and anterior and posterior breadths 40 : 30 : 55; anterior angle broadly rounded; median area micro-alutaceous; lateral margin weakly carinate, and in dorsal view, feebly curved in S-shape. Mesoscutum 20 × 45, micro-alutaceous; parapsidal furrows slightly divergent at both ends; lateral lobe narrower than median lobe (breadth across middle 12 : 16), with a weak longitudinal depression near middle, area outside of depression shining, slightly raised before gently descending to lateral suture. Scutellum 20 × 34, micro-alutaceous at disc, obliquely microstriate behind at side; axilla flattened, obliquely striate, hardly separated. Metanotum with strong carina at middle and slightly oblique striae at side. Profile length of tegula and pronotum 36 : 42. Venation as in fig. 6, c. Hind femur and tibia as in fig. 6, i. Ratio of basal and apical breadths of abdominal tergite 4 about 78 : 52; tergite 5 smooth, 6 micropunctate.

MATERIAL EXAMINED: PHILIPPINES: 1 ♂ (USNM), Island Sibuyan, C. F. Baker.

The original description was based on a unique specimen without antennae and abdomen. The specimen examined by us was not included in the type series.

This species was stated by its author to be closely allied to *L. philippinensis* and *L. maculipennis*. The former is characterized by the simpler antennal ledge, smooth axilla, shorter hind femoral lamina and differently shaped cervical plate and pronotum. The venation appears to be not so distinctive as emphasized by Fouts. On the other hand, by the presence of club-shaped hairs on cheek and median suture on face, the lack of median carina on metanotum, the smaller body size, the much broader cheek and the quadrate cervical plate, *maculipennis* can be easily separated from *rufa*.

Loboscelidia (Loboscelidia) nigra Fouts Fig. 6d, j.

Loboscelidia nigra Fouts 1922: 621, ♂ (wrongly stated as ♀). Mindanao: Dapitan; Ba-

silan (USNM).

Male: Body hairs very fine, moderately long. Head much narrower than thorax including tegula (38 : 54); lower part of face transversely striate, with a complete median carina and at each side, 2 short oblique carinae; these carinae all weak and radiating from different points on inferior projection of antennal ledge; area outside oblique carinae also striate, hardly depressed; malar space smooth; upper part of face with a delicate median carina and dense micropunctures forming obscure oblique striation, its lateral carina sharp, subparallel to inner eye-margin, running from antennal ledge (Fouts said "from malar space") to occipital margin; median ocellus about 1/3 of its diameter distant from lateral ocellus; ratio of ocellar diameter, POL and OOL about 4 : 4 : 7; occipital margin about 1/2 and 1 ocellar diameter, respectively, distant from lateral ocellus and eye; cheek narrower than eye (9 : 15), strongly narrowed upward. Cervical plate 14 × 9 (minimum breadth 6.5); lateral margins in dorsal aspect straight, slightly convergent basad; profile depth 1/3 of length. Antennal ledge 2-layered; in profile, apically slightly emarginate, about as wide as antennal segment 3; in front view, forming triangular areole which is about 2 × as broad as high, inferior projection V-shaped; when viewed from above, inferior projection and lobes of superior projection all rounded apically. Antenna nearly 2 × as long as body; scape 26 × 9; lamina linear, indistinct, much shorter than scape proper; segment 2, 4 × 6; 3, 17 × 7; 4, 19 × 7; 13, 26 × 6, hardly longer than 12, apex subacute in profile. Pronotum convex, length and anterior and posterior widths 27 : 24 : 42; lateral margin weakly carinate, straight in dorsal aspect; anterior angle narrowly rounded. Mesoscutum 17 × 37; median lobe broader than lateral lobe (breadths across middle 12 : 10), both longitudinally concave; parapsidal furrows apparently incomplete (particularly when viewed dorso-caudally), weakly divergent at both ends (Fouts said "complete, parallel"); lateral lobe longitudinally raised and abruptly carinated at outside, forming a short submarginal longitudinal depression. Scutellum 17 × 28; axilla slightly raised laterally, largely smooth. Metanotum microsculptured, weakly raised near middle, no median carina. Profile lengths of tegula and pronotum 27 : 31. Venation as in fig. 6, d. Hind femur and tibia as in fig. 6, j; relative length of segment of hind tarsus 17 : 7.5 : 6 : 4 : 10. Abdomen normal (Fouts said "6-segmented"); basal and apical breadths of tergite 4, 62 : 40; tergite 5 practically smooth; 6 micropunctate. Other characters as in original description.

MATERIAL EXAMINED: PHILIPPINES: 1 ♂ paratype (USNM), Island of Basilan, C. F. Baker.

This species is very distinctive in having very long antennae, short scape and indistinct antennal laminae.

Loboscelidia (Loboscelidia) collaris Fouts Fig. 6e, k.

Loboscelidia collaris Fouts 1922: 627, ♂ (wrongly stated as ♀). Singapore (USNM).

Male: Body hairs very fine, moderately long. Length 2.3 mm, to forewing apices 3.7. Head narrower than thorax including tegulae (32 : 40); lower part of face smooth, depressed, with strong median carina, and each side with a weaker oblique carina; these carinae all originating from midpoint of inferior projection of antennal ledge; malar space and upper part of face micro-alutaceous, lateral carina of latter originating from antennal ledge, strong, but at upper 1/2 hardly recognizable; ocelli similar to that in *L. nigra*; cheek narrower than eye (8 : 12), abruptly narrowed upward. Antennal ledge similar to

that in *nigra*, but in frontal view the triangular areole enclosed by superior and inferior projections about as high as wide; when viewed from above, lobes of superior projection broadly rounded apically and close to each other, inferior projection apically subacute. Cervical plate micro-alutaceous, hardly concave at median area, ratio of length and minimum and apical breadths 12 : 6 : 10, profile depth 1/4 of length; lateral margin straight in dorsal view. Antenna nearly 1/2 longer than body; scape 22×9 , slightly narrowed basad; lamina evenly narrow, about 1/5 as wide as basal part of scape proper; segment 2, 4×5 ; 3, 11×6 ; 4, 12×5 ; 13, 16×4 . Pronotum convex, micro-alutaceous, length and anterior and posterior breadths 25 : 21 : 32; lateral margins sharply carinate, anteriorly rather strongly convergent; anterior angle broadly rounded. Mesoscutum 11×28 ; parapsidal furrows nearly straight and parallel; lateral lobe much narrower than median lobe, its anterior 1/3 with dense short recumbent hairs, other 2/3 smooth. Scutellum 14×20 , posterior 1/3 densely micropunctate; axilla concave, punctate, laterally raised. Metanotum longitudinally microstriate, median carina distinct. Profile lengths of tegula and pronotum 20 : 25. Venation as in fig. 6, e. Hind femur and tibia as in fig. 6, k. Abdominal tergites all micro-alutaceous; tergite 4 largely shining black, basal and apical breadths 46 : 27 in ratio; tergite 5 (exposed part) $2 \times$ as long as 6. Other characters as in original description.

MATERIAL EXAMINED: BORNEO: 1 ♂ (BISHOP), Rejang Delta, Sarikei Distr., Sarawak, 15 to 26-VII-1958, T. C. Maa.

This species is rather unusual in having microsculptured pronotum and abdominal tergites and in having very long tergite 5. Our unique specimen differs from Fouts' description only in a few points of minor importance, and the identity appears conclusive.

Loboscelidia (Loboscelidia) scutellata Fouts Fig. 6f, 1.

Loboscelidia scutellata Fouts 1922: 628, ♂ (wrongly stated as ♀). Basilan; Mindanao: Surigao (USNM).

Male: Length 2.6 mm, to apices of forewings 3.8. Relative breadths of head, thorax (incl. tegulae) and abdomen 31 : 42 : 45. Lower part of face depressed, with transverse striae, and 3 strong carinae radiating from middle of bottom of antennal ledge and reaching (median carina) or almost reaching (lateral carinae) clypeo-labral suture; upper part of face micro-alutaceous; cheek much narrower than eye (7 : 12), strongly narrowed upward; ratio of ocellar diameter, POL and OOL about 4 : 4 : 6; lateral ocellus equidistant from median ocellus and from occipital margin; eye about an ocellar diameter distant from occipital margin. Antennal ledge 2-layered, in profile apically emarginate and about as broad as antennal segment 2; in frontal view, almost isogonally triangular with narrowly rounded bottom; when viewed from above, lobes of superior projection narrowly rounded and remote from each other, inferior projection apically acute. Cervical plate 11×9 (minimum breadth 7), profile depth about 1/3 of length. Antenna about 1/2 longer than body; scape 21×7 , evenly broad; lamina narrowed apicad, as long as scape proper but narrower than basal part of latter; segment 2, 4×5 ; 3, 11×6 ; 4, 13×6 ; 13, 15×5 , narrowly rounded at apex in profile. Pronotum weakly convex, micro-alutaceous, ratio of length and anterior and posterior breadths 23 : 20 : 33; anterior angle broadly rounded; lateral margin straight in dorsal view. Mesoscutum 13×28 , smooth; parapsidal

furrows hardly divergent at both ends. Scutellum 12×22 ; axilla concave, largely smooth. Metanotum with a weak carina at middle and longitudinally striate at side (Fouts said "polished"). Tegulae with scattered hairs, in profile as long as pronotum ($22 : 22$). Venation as in fig. 6, f. Hind femur and tibia as in fig. 6, 1; relative length of segments of hind tarsus $14 : 6 : 4 : 4 : 7$. Abdominal tergite 5 smooth, 6 microsculptured. Other characters as in original description.

MATERIAL EXAMINED: PHILIPPINES: 1 ♂ paratype (USNM), Island of Basilan.

The relative distances of the ocelli to their surroundings, and widths of cheek and eye given by Fouts (*l. c.*) are not in accord with our findings. His method to measure the length and height of the head and the breadth of hind basitarsus is also very puzzling.

The most distinctive character of this species is the very short pronotum (as compared with tegula).

Loboscelidia (Loboscelidia) parva Maa and Yoshimoto, n. sp. Figs. 4c, 5c.

Male: Length 2.5 mm, to wing apices 4.5. Shining black, legs and abdomen slightly paler; forewing pale brownish, slightly darker at apex, with a triangular darker marking distad to basimedial cell.

Head micro-alutaceous, much narrower than thorax including tegulae ($32 : 44$); lower portion of face weakly convex, lacking median and submedian carinae, but below each antennal insertion with a longitudinal series of 3 long erect hairs, each arising from distinct small pit (other scattered hairs not arising from such pits); malar space and vicinities microstriate; lateral carina of face practically undefinable except between eye and lateral ocellus where it is broad and prominent; upper portion of face hairless, weakly convex, with short faint median carina immediately above antennal ledge; median ocellus anteriorly lying in a well rimmed, transversely elliptic depression, about $2/5$ its diameter distant from lateral ocellus; lateral ocelli about $1/2$ their diameter distant from occipital margin; ratio of their diameter, their interdistance (POL) and distance to eye (OOL) $4 : 5 : 6$; eye $3/4$ of ocellar diameter distant from occipital margin; cheek narrower than eye ($7 : 13$), strongly narrowed upward, with quite scattered short hairs. Antennal ledge anteriorly scarcely emarginate when viewed from above or below, lacking distinct inferior projection, weakly, shallowly U-shaped in frontal view, subtriangular and apically acute in profile. Cervical plate 13×8 , hairless, evenly, moderately arched; its lateral margins in dorsal view nearly straight, hardly convergent near anterior end; median area broadly, shallowly depressed; profile depth only about $1/8$ of length. Antenna much longer than body; scape 19×7 , with short recumbent hairs, its lamina evenly narrow, opaque, about $1/5$ as wide as and reaching apex of scape proper; segment 2, 6×5 ; 3, $12 \times 5\frac{1}{2}$, slightly shorter and wider than 4; 13, 16×5 , its apex not distinctly compressed, narrowly rounded in dorsal view and subacute in profile; other segments similar in length and width to 3. Pronotum transverse, 23×34 , weakly flattened, weakly arched anteriorly, apparently hairless, posteriorly with a faint broad inverted Y-shaped depression; anterior angle raised, shoulder-like, rounded off; lateral margins in dorsal view distinctly convergent cephalad, slightly convexly curved, largely rounded off, posteriorly weakly carinate. Mesoscutum 16×33 , elevated at vicinities of parapsidal furrow, micro-alutaceous at anterior corner, elsewhere smooth; parapsidal furrows straight, weakly divergent cephalad, posterior $1/3$ not recognizable; median lobe much broader than lateral ones, longitudinally depressed; posterior $1/3$ of

lateral lobe with a longitudinal sublateral furrow and carina, carina lying immediately outside this furrow and demarcating marginal slope which is narrow and gently descending. Scutellum 17×27 , smooth, hairless, posterolaterally with a few microstriae; axilla demarcated by hardly discernible suture. Metanotum smooth. Tegula smooth (anterior and latero-ventral margins microstriate), with scattered short hairs, in profile nearly as long as pronotum ($23 : 24$). Propodeum hairless, basal $1/2$ separated from metapleuron by a sharp carina. Forewing with short cilia along apical $1/2$ of anal margin, lacking hairs on surface; basal vein complete, distinct, evenly curved; apical abscissa of subcosta well developed; relative length of veins as in fig. 4, c. Hind femur and tibia as in fig. 5, c; membranous lamina of hind femur moderately long, triangular; relative length of segments of hind tarsus $14 : 6 : 5 : 4 : 6\frac{1}{2}$. Abdominal tergite 4 with basal vs. apical width in ratio $45 : 29$; 5 unsculptured; 6 shorter than wide, fairly densely micropunctate.

Female: Unknown.

NEW BRITAIN: Holotype ♂ (BISHOP), Vunabakan, 10 km E of Keravat, 180 m, 16 to 20-XI-1959, T. C. Maa.

Very close to the next species, but cervical plate long and evenly narrow, apical abscissa of subcosta well developed, femoral lamina much narrower and differently shaped, body darker, forewing paler, etc. The name *parva* refers to the narrow cervical plate and femoral lamina.

Loboscelidia (Loboscelidia) cervix Maa and Yoshimoto, n. sp. Figs. 4d, 5d.

Male: Length 2.3 mm, to wing apex 4.2. Blackish brown, upper part of face darker, pronotum and apical portion of abdomen reddish brown; forewing with similar brownish spots and streaks as in *L. inermis* Kieff.

Head micro-alutaceous, much narrower than thorax including tegulae ($31 : 41$); lower portion of face weakly convex, shining, with scattered long hairs, lacking median and submedian carinae; upper portion of face hairless, also weakly convex, with few feeble microstriae and slightly above antennal ledge with a quite short distinct median carina; ocelli similar to those in *L. parva* n. sp., but median ocellus anteriorly lying in a deep but not rimmed depression, slightly less than its diameter distant from lateral ocellus; eye $1/2$ of ocellar diameter distant from occipital margin; cheek narrower than eye ($6 : 11$), strongly narrowed upward, with more short hairs than at lower portion of face and than in *parva*. Antennal ledge similar to that in *parva*, but more deeply emarginated anteriorly when viewed from below and almost horizontal in frontal view. Cervical plate as long as wide ($10 : 10$), with scattered short hairs, evenly, moderately arched; its fore and hind ends equally wide, lateral margin deeply sinuate at basal $1/3$; median area broadly, shallowly depressed; profile depth about $1/4$ of length. Antenna much longer than body; scape 17×9 , with some short recumbent hairs, its lamina semitransparent, evenly narrow, about $1/4$ as wide as scape proper; segment 2, 4×5 ; 3, 10×5 , as long and wide as 4; 13, 16×5 , largely cylindrical, its apex slightly compressed, rounded in dorsal aspect and subacute in profile; other segments similar in length and width to 3. Pronotum weakly convex, arched cephalad, with scattered, very short hairs; its median length and anterior and posterior widths in ratio $23 : 22 : 32$; anterior angle rounded off, not raised; lateral margin in dorsal view straight, carinate, but extreme anterior end rounded; posterior area slightly depressed

submedially. Mesoscutum 11×27 , hairless, gently convex, micro-alutaceous at depressed areas, elsewhere smooth; parapsidal furrows slightly curved, distinctly divergent cephalad, their posterior $1/4$ undefinable; median lobe much wider than lateral ones, hardly depressed longitudinally; lateral lobe similar to that in *parva*, but lateral marginal slope vertical, abruptly demarcated. Scutellum 14×21 , smooth, gently convex, with scattered micropunctures; axilla raised, not clearly defined. Metanotum micro-shagreened. Tegula unsculptured, with scattered hairs, as long as pronotum in profile ($20:20$). Propodeum as in *parva*. Forewing with shorter cilia and basal vein similar to that in *parva*; under surface haired; apical abscissa of subcosta vestigial; relative length of veins as in fig. 4, d. Hind femur and tibia as in fig. 5, d; membranous lamina of hind femur subquadrate, very wide; relative length of segments of hind tarsus $13:4\frac{1}{2}; 4\frac{1}{2}:3\frac{1}{2}:6$. Abdominal tergite 4 with basal vs. apical width in ratio $43:24$; 5 and 6 both fairly densely micropunctate; 6, 4×7 , with exceedingly short hairs.

Female: Unknown.

NEW BRITAIN: Holotype ♂ (BISHOP), Vudal, nr. Keravat, 180 m, 13-XII-1959, T. C. Maa.

As shown in the key and descriptions, this and the preceding species are related to one another and share some important common characters: lower portion of face not carinate, cheek narrow, antennal ledge single layered, antennal lamina long and evenly narrow, pronotum transverse, parapsidal furrow incomplete, etc. The name *cervix* refers to the sub-basally constricted cervical plate, by which along with the quadrate, quite large femoral lamina, these 2 species can be easily separated.

LIST OF SPECIES OF LOBOSCELIDIA

(Note: Dr. Krombein has very kindly examined all of Fouts' types and found all of them are males except for the type of *antennata* which is a female. It is also possible that Kieffer (1916) wrongly identified his male specimens as female).

Subgenus *Scelidoloba* n. subgen.

antennata Fouts 1922: 622, ♀. Singapore (USNM), known from unique ♀. "Membranes on tibiae and tarsi" in the original description should read "membranes of femora and tibiae."

Subgenus *Loboscelidia*, s. s.

bakeri Fouts (see above). Borneo: Sandakan. Known from 5 ♂.

brunnea Fouts 1922: 626, ♂ (wrongly stated as ♀). Borneo: Sandakan (USNM), known from unique ♂. Related to *defecta* Kieff.

carinata Fouts 1922: 626, ♂ (wrongly stated as ♀). Singapore (USNM), known from unique ♂. Related to *maculipennis* Fouts.

cervix n. sp. ♂. New Britain: Vudal (see above).

collaris Fouts (see above). Singapore; Borneo. Known from 2 ♂.

defecta Kieff. (see above). Palawan; Borneo: Sandakan; Singapore. Type in Berlin Mus. (?). Known from about 18 specimens of both sexes.

inermis Kieffer 1916 a: 15 & 16, figs. 6 a to 6 d, ♀ (?♂). Mindanao: Butuan (in Berlin Mus. ?); 1916 b: 399, ♀ (as n. sp.).—Fouts 1922: 620 (key). Known from 3 ♀

(?♂).

maculipennis Fouts 1922: 625, fig. 1, ♂ (wrongly stated as ♀). Borneo: Sandakan (USNM), known from unique ♂. "Front tarsi as in *philippinensis*" in the original description should read "hind tarsi as in *philippinensis*."

nigra Fouts (see above). Mindanao; Basilan. Known from 2 ♂.

nigricornis Fouts 1925: 517, ♂. Mindanao: Surigao (USNM), known from unique ♂.

Probably a synonym of *defecta*.

parva n. sp. ♂. New Britain: Vunabakan (see above).

philippinensis Fouts (see above). Mindanao. Known from 4 ♂.

reducta n. sp. ♂. Vietnam (see above).

rufa Fouts (see above). Sibuyan I. Known from 2 ♂.

rufescens Westwood (see above). Sula (not Sulu) Is. Known from 2 ♀ (?♂).

scutellata Fouts (see above). Basilan; Mindanao. Known from 5 ♂.

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